```
<110> Dumoutier, Laure
      Louhed, Jamila
      Renauld, Jean-Christophe
<120> Isolated Nucleic Acid Molecules which Encode T Cell Inducible Factors
(TIFs)
      The Proteins Encoded, and Uses Thereof
<130> LUD 5543.2
<140> US09/419,568
<141> 1999-10-18
<150> US09/354,243
<151> 1999-07-16
<150> US09/178,973
<151> 1998-10-26
<160> 29
<210> 1
<211> 24
<212> DNA
<213> Mus musculus
<220>
<400> 1
agcactctcc agcctctcac cgca
<210> 2
<211> 12
<212> DNA
<213> Mus musculus
<220>
<400> 2
                12
gatctgcggt ga
<210> 3
 <211> 24
 <212> DNA
 <213> Mus musculus
 <220>
 <400> 3
                              24
 accgacgtcg actatccatg aaca
 <210> 4
 <211> 12
 <212> DNA
 <213> Mus musculus
 <220>
 <400> 4
               12
 gatctgttca tg
```

<210> 5

```
<211> 24
<212> DNA
<213> Mus musculus
<220>
<400> 5
aggcaactgt gctatccgag ggaa
                             24
<210> 6
<211> 12
<212> DNA
<213> Mus musculus
<220>
<400> 6
                12
gatcttccct cg
<210> 7
<211> 1119
<212> DNA
<213> Mus musculus
<220>
<400> 7
taaacaggct ctcctctcac ttatcaactg ttgacacttg tgcgatctct gatggctgtc
                                                                     60
ctgcagaaat ctatgagttt ttcccttatg gggactttgg ccgccagctg cctgcttctc
                                                                    120
attgccctgt gggcccagga ggcaaatgcg ctgcccgtca acacccggtg caagcttgag
                                                                     180
gtgtccaact tccagcagcc gtacatcgtc aaccgcacct ttatgctggc caaggaggcc
agcettgeag ataacaacae agaegteegg eteategggg agaaactgtt eegaggagte
                                                                     300
agtgctaaag atcagtgcta cctgatgaag caggtgctca acttcaccct ggaagacgtt
                                                                     360
ctgctccccc agtcagacag gttccagccc tacatgcagg aggtggtacc tttcctgacc
aaactcagca atcagctcag ctcctgtcac atcagcggtg acgaccagaa catccagaag
                                                                     480
aatgtcagaa ggctgaagga gacagtgaaa aagcttggag agagtggaga gatcaaggcg
                                                                     540
attggggaac tggacctgct gtttatgtct ctgagaaatg cttgcgtctg agcgagaaga
                                                                     600
agctagaaaa cgaagaactg ctccttcctg ccttctaaaa agaacaataa gatccctgaa
                                                                     660
 tggacttttt tactaaagga aagtgagaag ctaacgtcca tcatcattag aagatttcac
                                                                     720
 atgaaacctg gctcagttga aaaagaaaat agtgtcaagt tgtccatgag accagaggta
                                                                     780
 gacttgataa ccacaaagat tcattgacaa tattttattg tcactgatga tacaacagaa
 aaataatgta ctttaaaaaa ttgtttgaaa ggaggttacc tctcattcct ttagaaaaaa
 agcttatgta acttcatttc catatccaat attttatata tgtaagttta tttattataa
```

gtatacattt tatttatgtc agtttattaa tatggattta tttatagaaa cattatctgc 1020 tattgatatt tagtataagg caaataatat ttatgacaat aactatggaa acaagatatc 1080 ttaggcttta ataaacacat ggatatcata aaaaaaaaa 1119

<210> 8 <211> 7445 <212> DNA <213> Mus musculus <220> <400> 8 gtctatcacc tgcttaagat tcttctaatt tataaaaaaa actatttctt aaaatgaaaa 60 gcaaccagag cacgtattta tagcatggtg ttctgaccat gcaggtacag agtggaatgg 120 taagaggcgc tattatcagc attaaccaac atgttaatgt tttcttctgg caagcaaact 180 tgaaatctat gtcttaaaca atcttcaagc ctctaatata gtgctaacga ctggagtccg 240 ctgctgtcca acagagctct tgagcacgct ctcctctgtt tgcaatttta tgttctttga 300 360 togactocco aacototoac ottoggotoc tgatggocac otttoaactt totgoattta tgaactccat gttttaatct ttttattaaa atattcacac aatcagtgtt tgtgcaagtc tgtttcaccc acatgtatgt ctgtgcacca agtgctgcct ggtgcttgtg ggggcaagga 540 gcaggagagg gtgccctggc accggagtca cggatggttg tgagccacca tgaggatgct gggagttaga cccaggtcct ccagaagtgc agcaaatgct cttaaccaca cgcaggcatt 600 tctctctcca gccccaacat gagtgctttt agattccacc tagaatagag atctgatggc 660 720 ttcactcact gccacctccc ctttgcatct ttctgccaag gaacaccaaa aagcaagaat ccccacactg ctttcgctcc tcaagtctgc acctctcaac aggtcaagat tctccagtgt 780 ccctctaaca ctttccccag tgtccctcta acactttctc cagtgtccct ctaacacttt 840 ctccagtgtc cctctaacac ttttgatctc aattagctga ggggagaaag atctcacaca gtgattttca tgacttcgcg ttctagtcta gatgtaggca tttgcgtgtc agtctagggt aggogtotgo tocogotgot taggaaagac tttoctagto tagttgtcag gtgctatotg 1020 ggattcagtg tacatacaat gcaaaaaatc ccagtatttt gtaaattctc ttcttcaact 1080 atccatctat atagtatgtt attgtaggct catttaaaaa taatattttg agacttatgc 1140 ttgcacaagt aaaatgtcag agaattagca aatgtatagt attattttat tttaaaaaaa 1200 tctatgctta aaatgtctat tagattgttc actaccgata tttccaaact taacttgacc 1260 ttggctatga tttcaacctt tgtatttgca tctaccataa cagtctctga accagaacat 1320 tctgtggcaa tgggagctgt gaagaaagcc aacattctta ttaaaaaaaa aaaacagcta 1380 gttatagttt aggattccat atactaaaaa aaatagagat ataattattt taaaaaattga 1440 aataatctcc aagttttcat tatggcttat ttcaaagcac agaatatagg acacgggtct 1500 tttatttctg gtcacttcta aagagataag aatctatgaa gttggtggga aaatgagtcc 1560 gtgaccaaaa cgctgactca atagctacgg gagatcaaag gctgctctac tcaatcagaa 1620 tctactacgg caaagccatg gctttctttg aaaaccgtgt ttagaagatt tctgggattt 1680 gtgtgcaaaa gcaccttgtt ggccctcacc gtgacgtttt agggaagact tcccatctct 1740 caaggtggga aggcttggag gtggtgtctt gtggcctcct atggtggtta ggtacttctc 1800 agaagacagg actggaaatt agataatgtc tgatgtcata tcattcacaa taccaaaaaa 1860 accetggtgt cccgatggct ataaaagcag caacttetge eteteceate acaagcagag 1920 acacctaaac aggtaagcac tcagacctct acagacaatc atctgcttgg taccatgcta 1980 cccgacgaac atgctcccct gatgtttttg ccttttgctc tctcactaac aggctctcct 2040 ctcacttatc aactgttgac acttgtgcga tctctgatgg ctgtcctgca gaaatctatg 2100 agtttttccc ttatggggac tttggccgcc agctgcctgc ttctcattgc cctgtgggcc 2160 caggaggcaa atgcgctgcc cgtcaacacc cggtgcaagc ttgaggtgtc caacttccag 2220 cagcegtaca tegteaaceg cacetttatg etggecaagg aggtacaget geatetettt 2280 ctctccatac cgccttgcca ttttctctga agcacttgca aactctttag gggcgcttta 2340 tctccgcagg tctcactacc tatgttttct gtctctttag agactcttta aggactgggt 2400 ctttttctat ttctatttca aggtctcagg accatttcct atcttggcct tcaggacaca 2460 tatactgaat tttatctaca gaggcgcatt tagaaagcca cccacgactg caatactttc 2520 cattletetg tgetetette tgaacteata etetettgge tacteetgag acceaetgeg 2580 gacatacatc totacttaca ggottttctt coatctcctt gtcacccagg cacttagggt 2640 tttctctctt tcaggccagc cttgcagata acaacacaga cgtccggctc atcggggaga 2700 aactgttccg aggagtcagt gtaagtcctc actgtgatga gcagggctag ctgcgggagc 2760 tggtggaccc tctgggatag tctgacgtat gacccctgct gcttcttgtc tacctgcagg 2820 ctaaagatca gtgctacctg atgaagcagg tgctcaactt caccctggaa gacgttctgc 2880

tececeagte agacaggtte cagecetaca tgeaggaggt ggtacettte etgaceaaac 2940 teageaatea geteagetee tgtgtaagte tgaetetgge tacetatget eetetetet 3000 cctcttctat tccagtaaga acccgaggtc ctgccctctc tctcttcaca agagtgagga 3060 gggcctcagc accaccacca tcataggcca cttgaaatag gtcacaaagg ctttggcttc 3120 aattgagtaa tactttgagt ttgtatgagt gaagctttat ttgttttatc catggaaaga 3180 aatcaactca aattctgtag gatgagaaag atgttgggaa cgaaaaaagg cctagataga 3240 gaaacagatc tgctgagtat agtacttatg gggggagcag ggggcgatat ccactgagta 3300 caagtacttg tggggagaga aatccactga gtacaagtac ttgttggcat ggagatccac 3360 tgagtacaag tacttgtggg gggagggaat ggcacagagc aaaagttgaa gggaaggaag 3420 atggagaggc ctcatggttg ggggtgtgaa aggtcactcc ttttccatgt gatggagagt 3480 taagaaaaac cagtgtgtga gtttgatgtc ttcagacacc cccaactatg aaacatatcc 3540 acgaggagcg ggcagactgt gggagacctg gcatttaggg aaggcgcggc ttttcacacg 3600 agaaacttta tgctcatctc ttgtgctaca ctcccacctt tgatgaggtt cagctcaggt 3660 ttcgtttcta ccgttcttgc tactggtgga aacttcagta ggattcccca aagacgagga 3720 cagetettet gtaagggagg gaeetggatt teagtgteet agagaaegaa atageteaga 3780 gaatctaggt caacgtgaaa tctaggtcac agcgggcaaa aatgactgaa cgcctctatt 3840 ccaggtgaac ggtcacgtgc ctcagatata ctgaggtatt gggctcccac cggataagat 3900 tctgttagtg agtctgcttt tattttgcag cacatcagcg gtgacgacca gaacatccag 3960 aagaatgtca gaaggctgaa ggagacagtg aaaaaggtac tattggcaag ccacaatact 4020 aagccattca gtaggagacg tggggatttc tttctctgct tcccagtccc ttctactttg 4080 taacatttta tttgacttgt ctactatctg gtccattact cgcttagctg cacctgtatc 4140 tagctgggtc tatagatctt tcaatctgtg tctaaatttg taagtcacaa ttctggagct 4200 agcagaaagc ttagctcagc cagtctcatg agcacttgct cggaggatgg cttgtgacag 4260 agtcaatgct agaagacagc atccctgatt cccagctctg cacttgccta gtggccatgt 4320 gtaattactt tggcttgatt aagtatttgg gaaagccagt tcccacggac ctacataatc 4380 tgaagaacca tgcattgaaa actagaaagc tgggcacaaa cttactagag atgatttttg 4440 ageteattaa aeggatgete tgaaatgtgg caaaatcaae eeagaataae aacaaaagag 4500

ctggatttgc aaataggaca agtatttaga atcactggta ttaatagcta tcatcttaat 4560 taaaatatag ggcctatata tatatttaag attaaacaca agagtggata gcctcccaat 4620 ttacttggcc tggtttcaaa agagtaaaaa tatcagtcat ggattaatta tagtgtcatg 4680 aaagtatgag atggaaaccc tttccttact ttttaccttc atttcttagt ttttttttc 4740 ttcacaccct gatcaagcca ctagtaagca cctatctgct gtgagctatt atatgacttt 4800 acagcaaaca acattgctgt gtggcctctt tggggaaggg aacaggatag caggaggctc 4860 aggctagcaa gtctgacttg ccctaaagcc agaggcatgg ttgatagcag agaaagtgag 4920 gctcttcgca agtgggtgtg cttaagtaat cagaaacagg aaggctccgg ttgatggaat 4980 tatcagtaag atatctaccc ttatctcctt ctatcgaacc taaatcgtct ctttttcttg 5040 tgtgtaggct gataaacaca cttgttttct tttgagtgtt catggctttg tagattttta 5100 qtgctctgcc agttcttgtt agagggtttg ttaccttgac acctgggctt ggatgttagc 5160 atgccaaagg cacacattc tgaatgcctg tgtaaaaggt tattattcat ttactttgtc 5220 tttqqaaagg tgaagcgtgt gtgagaaaga actcacagga gatgtgttct ctgtaggaaa 5280 acttttttt tccccttaaa tgcctataat ccactttcag tcaactttga cttttatacc 5340 atgctgtcac atgaaagagt gtttaggccc gctctcatgg ctctgggaaa agcaccaata 5400 ggggaaggaa tgttatgctg agaaatctga ccggcaggga aactggtcag agctcccccg 5460 aagaccacca caggtgttaa gtaggaacag tccagggtgg gctcatgtaa tagaatggaa 5520 cagagcgagg gaagataagc tacaaagttt catagggtcc ggagtcttaa agatacaaaa 5580 tagctgcttg ggcttcataa caaaggaagt ctgggaaggc agcaagtgag agggaaatgg 5640 aaagggaaaa aacagaatgt agaggacttg aacagctaca aatcctctac cagacgattt 5700 ttcttggaac aatctagaag gtagtggatt aggtgattgc aggggggactt gctttgccat 5760 ttgaatctgg gtttttgtct ctccattgag gttgaaagcg tcaccctttt taccctcgaa 5820 tggaggagga aagaaggggt gttatgactc ctacctggag ttttactagt ttacgcaatg 5880 gaacagacac tcgggacctc ctcttgacaa aaaaaatgga aacctgttgt ttgtcttgtt 5940 tgttcttttg ttaagaaagc acaggcaaag cccgaccaca tgggttgaat gtgggtcttt 6000 gagtcaaggc ttttgagttg agcactcatc aatagttgat catggtcagg tggagggcta 6060 cctgtcaggc cgagccctgc tggcttcgca cttaacatct ccaggtctca gtatcacttc 6120 ctgctactta gcacagttag gagttgagca aacctttttt tccaaccccc acțaaaattt 6180 aattgacaaa agactgtgta atttgtggga tacagtgtga taattgatct atgtgtgcat 6240 tgtgcaaggt tcaataagat agattaatag gcccatcaac agctttatgg gtgtgaaatg 6300 caagtaatat aggtagatgc ctgtggtgtc cttaggtcag aaaggcatga ttttaaggtc 6360 ttgggcaaat catattatac tcatgctaaa aatacattat gttgattatt aatcttttag 6420 agaaggctga tacttggttt tggtgctcag caagcaaatg tcaccagctc tttctaactg 6480 gtaccacttt agaaaatgct acctgtgctc aaattggttt gtattcttat tttcatagct 6540 tggagagagt ggagagatca aggcgattgg ggaactggac ctgctgttta tgtctctgag 6600 aaatgcttgc gtctgagcga gaagaagcta gaaaacgaag aactgctcct tcctgccttc 6660 taaaaagaac aataagatcc ctgaatggac ttttttacta aaggaaagtg agaagctaac 6720 gtccatcatc attagaagat ttcacatgaa acctggctca gttgaaaaag aaaatagtgt 6780 caagttgtcc atgagaccag aggtagactt gataaccaca aagattcatt gacaatattt 6840 tattgtcact gatgatacaa cagaaaaata atgtacttta aaaaattgtt tgaaaggagg 6900 ttacctctca ttcctttaga aaaaaagctt atgtaacttc atttccatat ccaatatttt 6960 atatatqtaa gtttatttat tataagtata cattttattt atgtcagttt attaatatgg 7020 atttatttat agaaacatta tctgctattg atatttagta taaggcaaat aatatttatg 7080 acaataacta tggaaacaag atatcttagg ctttaataaa cacatggata tcataaatct 7140 totgtottgt aatttttoto ootttaatat caacaataco atcatcatca toattaccca 7200 atcattctca tgatttcatg cttgacccat attatactgt taaagttggt tcctggaggc 7260 ctgtggtttt gtgtgtgttg tgtgtgtgt tggggttatg catgtgaaag ccagagatgg 7320 atattaggtg ttcttctcta tcagtctttg ccttattatt tgagacaggg tctgtcactg 7380 aacctgtagc taggctggcc aacaagctct attaattttt tttaagatta attaattatg 7440 7445 tgtat

<sup>&</sup>lt;210> 9

<sup>&</sup>lt;211> 1111

<sup>&</sup>lt;212> DNA

<sup>&</sup>lt;213> Mus musculus

<sup>&</sup>lt;220>

<sup>&</sup>lt;400> 9

qcaqaaatct atgagttttt cccttatggg gactttggcc gccagctgcc tgcttctcat tgccctgtgg gcccaggagg caaatgcgct gcccatcaac acccggtgca agcttgaggt gtccaacttc cagcagccgt acatcgtcaa ccgcaccttt atgctggcca aggaggccag 240 ccttgcagat aacaacacag acgtccggct catcggggag aaactgttcc gaggagtcag 300 tgctaaggat cagtgctacc tgatgaagca ggtgctcaac ttcaccctgg aagacattct 360 gctcccccag tcagacaggt tccggcccta catgcaggag gtggtgcctt tcctgaccaa 420 actcagcaat cagctcagct cctgtcacat cagtggtgac gaccagaaca tccagaagaa 480 tgtcagaagg ctgaaggaga cagtgaaaaa gcttggagag agcggagaga tcaaagcgat cggggaactg gacctgctgt ttatgtctct gagaaatgct tgcgtctgag cgagaagaag 600 660 ctagaaaacg aagaactgct ccttcctgcc ttctaaaaag aacaataaga tccctgaatg gactttttta ctaaaggaaa gtgagaagct aacgtccacc atcattagaa gatttcacat 720 gaaacctggc tcagttgaaa gagaaaatag tgtcaagttg tccatgagac cagaggtaga 780 cttgataacc acaaagattc attgacaata ttttattgtc attgataatg caacagaaaa 840 agtatgtact ttaaaaaatt gtttgaaagg aggttacctc tcattcctct agaagaaaag 900 cctatgtaac ttcatttcca taaccaatac tttatatatg taagtttatt tattataagt atacatttta tttatgtcag tttattaata tggatttatt tatagaaaaa ttatctgatg 1020 ttgatatttg agtataaagc aaataatatt tatgataata actatagaaa caagatatct 1080 1111 taggetttaa taaacacatg aatateataa a

```
<210> 10
<211> 21
<212> DNA
<213> Mus musculus
<220>
<400> 10
ctgcctgctt ctcattgccc t
                           21
<210> 11
<211> 21
<212> DNA
<213> Mus musculus
<220>
<400> 11
caagtctacc tctggtctca t
                           21
```

```
<211> 20
<212> DNA
<213> Mus musculus
<220>
<400> 12
gacgcaagca tttctcagag
<210> 13
<211> 16
<212> DNA
<213> Homo sapiens
<220>
<400> 13
atgtatttcc cagaaa
                    16
<210> 14
<211> 17
<212> DNA
<213> Homo sapiens
<220>
<400> 14
ccttttctgg gaaatac
                     17
<210> 15
<211> 22
<212> DNA
<213> Homo sapiens
<220>
<400> 15
agctgctcaa cttcaccctg ga
<210> 16
<211> 22
<212> DNA
<213> Homo sapiens
<220>
<400> 16
ccactctctc caagcttttt ca
<210> 17
<211> 21
<212> DNA
<213> Homo sapiens
<220>
<400> 17
caagtctacc tctggtctca t
<210> 18
<211> 21
<212> DNA
<213> Homo sapiens
<220>
<400> 18
```

5

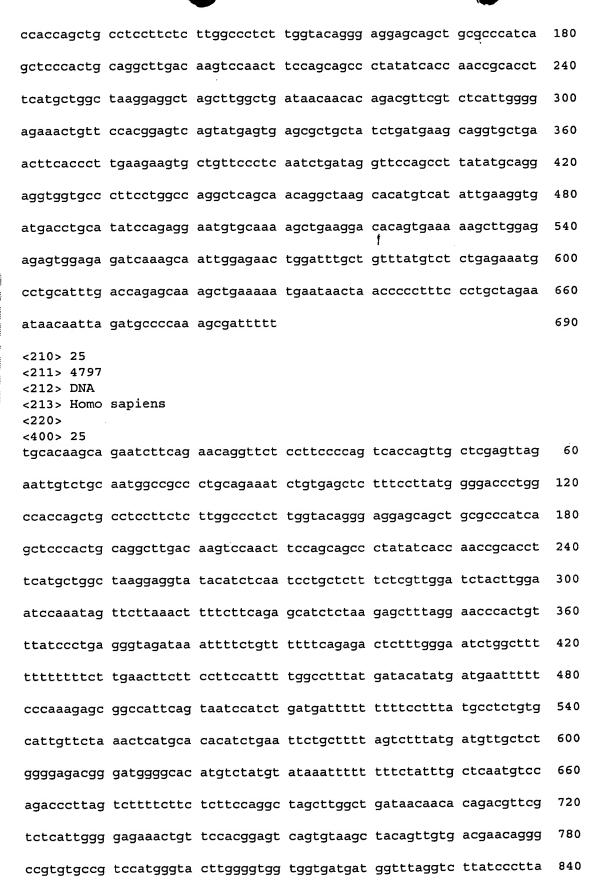
ŧ

```
<210> 19
    <211> 21
    <212> DNA
    <213> Homo sapiens
    <220>
    <400> 19
    tggccaggaa gggcaccacc t
                               21
    <210> 20
    <211> 36
    <212> DNA
                                                  f
    <213> Homo sapiens
    <220>
   <221>
   <222> 24,25,34,35
    <223> n is inosine
    <400> 20
   ggccacgcgt cgactagtac gggnngggnn gggnng
14
    <210> 21
┛
   <211> 20
   <212> DNA
    <213> Homo sapiens
    <220>
T.
   <400> 21
   ggccacgcgt cgactagtac
                            20
<210> 22
   <211> 20
    <212> DNA
    <213> Homo sapiens
    <220>
    <400> 22
    ccttccccag tcaccagttg
                             20
    <210> 23
    <211> 20
    <212> DNA
    <213> Homo sapiens
    <220>
    <400> 23
    taattgttat tcttagcagg
                             20
    <210> 24
    <211> 690
    <212> DNA
    <213> Homo sapiens
    <220>
    <400> 24
```

tgcacaagca gaatcttcag aacaggttct ccttccccag tcaccagttg ctcgagttag

aattgtctgc aatggccgcc ctgcagaaat ctgtgagctc tttccttatg gggaccctgg 120

tggccaggaa gggcaccacc t







cattaatgca ttgctttgaa acttggaaga ataaactcag aacaatgaga aaagagctgg 2520 acttgcatat agggctaatt tctggagtaa taaacactta ttttgaatta tcataatatc 2580 tatcagatat tgattatagt ttaaaagcaa gagcagacaa ccccgatctc ttttatacag 2640 gttcaaatag agtaaaaata ttagtaagag atttattata gttaaatgga agtctgaatt 2700 ggtaagcttt tttttcttcc tctctcccat caagaccttc cattctagtt tcttccttca 2760 ctccctcaac aaatccctag ggagcattta tccatggtgg gctggtgtac atttctatag 2820 tgaatgatac catcatgtgg cctatttggt gaaaagaaca acaatggaag gcttagacta 2880 acaatagtga ctcaccccaa aaccggagga atgattagga gcagtgaaag tgacgctctt 2940 gcaagcaggt acaactaaat actcagaaac atgaaggctc cagttgatgg aattttcagt 3000 aacaagetta acettaatte eecettttte eetettgaet tittaaaaaa gegittette 3060 ctgagcatca tttaatgagt gtgactgttt cttcctttga taattgaagg ctttgtagtt 3120 ttaaattgtg aagcccagtt ctcttgttat agaactatta tctagacatg gagggctgaa 3180 tgttagcatg ccacagacaa ggcatgcttt acacatcttg cttaaaaaat tactgatttc 3240 atcttgcttg ttgtctttag aaaagtgaag tgtgagagag gagaatctca tggtgatctg 3300 tgtgattttc aagaccttta atccattttg aaagaatcaa tttcatattt gcaatgggtt 3360 gccatgtgga agagtgatta tgcttttttg ctggtagctt cagaaagcac aggagggaga 3420 gcaatgttgt tcagagaaag atcaacagga ggagaaactg tcagagctgt ctgaaatagg 3480 gtggttttgg gaggcattaa ttccctctcg ttgggggtaa aagcagaacg caggttggta 3540 gtaaaatgca tgacagacag taggggacga taaactttaa aattctttat agtcttggag 3600 tctttgagat agaaaagaat atctttttgg ccttatgtca aaagaagtat ggaaaggtga 3660 aagggcggaa gaaagcagga aaaggaagaa ccatgtatta tatagaggac aatggtgaca 3720 aggtttttct tgaaataatg caaatatgat agattagagg aatttcagta gggaatgctt 3780 ttcacttgaa tttgggtttc ctcttcgatt aagtttggga tcctcatctg catttgactt 3840 ggagagagaa agaatgaatg ttaggaccta tatctggttt tctattaact aaagcaagtg 3900 gaaaagactt atttggtatt tttcccacaa aagtgaaaac ttttctttta ctgtttgtca 3960 aaaaggtgga aatagaaaaa gccttaatgt attggtgaat acatggttca aagtcatttg 4020 agtagagatg ttttaaatca ggagtgtcca atcatttggc ttccctggac caccttgaaa 4080 gaattgtctt ggtacacaca taaaatacaa gaacaatagc tgatgagcta aaaaagtcca 4140
tgcataaaatc tcatactgtt ttaagaaagt ttatgaattt ctgttagggt gcattcaaag 4200
ctgtcctggg ccatgtgcgg cctgtgggct gcaggttgga caagctcctt ataagtaatc 4260
tgtcatagat agttttggag ctgcaaaaca ggccaaggca taatgggtgg cactcgggat 4320
cccccagatc ccagcctcac ttcagtctcc ttgctctggt taagaagggg tggtcaactc 4380
tctgcccagc ttttaaacag cttcattagt gtgaggtgca cctgaaattg atgcctgctg 4440
gtggcctctc agtccagaga gccgtcatt taagctcttt ggcaaatcat acaatactaa 4500
agggatatta ctatgaatgt tttacaaatg cttaaaactc ggtttctgtc tccatcaacc 4560
taatcttgca atttctaatt tgttcacttt agaaaacatg gcataaatgc tcaaatactt 4620
ttgcattctt atttcacag cttggagaga gtggagagat caaagcaatt ggagaactgg 4680
atttgctgtt tatgtctctg agaaatgcct gcatttgacc agagcaaagc tgaaaaatga 4740
ataactaacc ccctttccct gctagaaata acaattagat gccccaaagc gattttt 4797

<210> 26 <211> 20 <212> DNA <213> Homo sapiens <220> <400> 26

atcagatgga ttactgaatg 20

<210> 27 <211> 179 <212> PRT <213> Mus musculus <220> <400> 27

Met Ala Val Leu Gln Lys Ser Met Ser Phe Ser Leu Met Gly Thr Leu

1 5 10 15

Ala Ala Ser Cys Leu Leu Leu Ile Ala Leu Trp Ala Gln Glu Ala Asn 20 25 30

Ala Leu Pro Val Asn Thr Arg Cys Lys Leu Glu Val Ser Asn Phe Gln 35 40 45

Gln Pro Tyr Ile Val Asn Arg Thr Phe Met Leu Ala Lys Glu Ala Ser 50 55 60

Leu Ala Asp Asn Asn Thr Asp Val Arg Leu Ile Gly Glu Lys Leu Phe 65 70 75 80

Arg Gly Val Ser Ala Lys Asp Gln Cys Tyr Leu Met Lys Gln Val Leu 85 90 95

Asn Phe Thr Leu Glu Asp Val Leu Leu Pro Gln Ser Asp Arg Phe Gln 100 105 110

Pro Tyr Met Gln Glu Val Val Pro Phe Leu Thr Lys Leu Ser Asn Gln 115 120 125

Leu Ser Ser Cys His Ile Ser Gly Asp Asp Gln Asn Ile Gln Lys Asn 130 135 140

Val Arg Arg Leu Lys Glu Thr Val Lys Lys Leu Gly Glu Ser Gly Glu 145 150 155 † 160

Ile Lys Ala Ile Gly Glu Leu Asp Leu Leu Phe Met Ser Leu Arg Asn 165 170 175

Ala Cys Val

<210> 28

<211> 179

<212> PRT

<213> Homo sapiens

<220>

<400> 28

Met Ala Ala Leu Gln Lys Ser Val Ser Ser Phe Leu Met Gly Thr Leu 1 5 10 15

Ala Thr Ser Cys Leu Leu Leu Leu Leu Leu Val Gln Glu Gly Ala
20 25 30

Ala Ala Pro Ile Ser Ser His Cys Arg Leu Asp Lys Ser Asn Phe Gln
35 40 45

Gln Pro Tyr Ile Thr Asn Arg Thr Phe Met Leu Ala Lys Glu Ala Ser 50 55. 60

Leu Ala Asp Asn Asn Thr Asp Val Arg Leu Ile Gly Glu Lys Leu Phe 65 70 75 80

His Gly Val Ser Met Ser Glu Arg Cys Tyr Leu Met Lys Gln Val Leu 85 90 95

Asn Phe Thr Leu Glu Glu Ile Leu Phe Pro Gln Ser Asp Arg Phe Arg
100 105 110

Pro Tyr Met Gln Glu Val Val Pro Phe Leu Ala Arg Leu Ser Asn Arg 115 120 125

Leu Ser Thr Cys His Ile Glu Gly Asp Asp Leu His Ile Gln Arg Asn 130 135 140

Val Gln Lys Leu Lys Cys Thr Val Lys Leu Gly Glu Ser Gly Glu

145 150 155 , 160

Ile Lys Ala Ile Gly Glu Leu Asp Leu Leu Phe Met Ser Leu Arg Asn 165 170 175

Ala Cys Ile

<210> 29

<211> 5935

<212> DNA

<213> Homo sapiens

<220>

<400> 29

gaattcaagt ccacatgcaa tcaatccgaa tactttgtaa attctcttct tcaaatatcc 60 atctatatag tataagttat tgtaggatca tttaaaaata atgttttgag acttatgttt gcacaagtaa aatgtcagag agaattagca aatgtatagt attatttat tttaaaaaaat ctatgcttaa aatgtctatt agattgttca ctactgacat ttccaaactt aacttgacct tggctatgat ttcaaccttt gtatttgcat ctaccataac tgtgtgctca cttaccatgc 300 tatccgacga gcatgttccc ctgatgtttt tgccttttgc tctctcgcta acaggctctc ctctcagtta tcaacttttg acacttgtgc gatcggtgat ggctgtcctg cagaaatcta 420 tgagtttttc ccttatgggg actttggccg ccagctgcct gcttctcatt gccctgtggg cccaggaggc aaatgcgctg cccatcaaca cccggtgcaa gcttgaggtg tccaacttcc agcagccgta catcgtcaac cgcaccttta tgctggccaa ggaggtacag ctgcatctct 600 ttctctccat accgccttgc catttctctg aagcacttgc aaactcttta ggggcgcttt atctccgcag gtctcactac ctatgttttc tgtctcttta gagactcttt aaggactgga tettttteta tttetattte aaggteteag gaceatttee tatettggee tteaggacae atatactgaa ttttatctac agaggcgcgt ttagaaagcc acccacgact gcaatacttt 840 ccatcctgtt gtgctctctt ctgaactcat actctcttgg ctactcctga gacccactgc 900 ggacatacat ctctacttac aggcttttct tccatctcct tgtcacccag gcacttaggg 960 ttttctctct ttcaggccag ccttgcagat aacaacacag acgtccggct catcggggag 1020 aaactgttcc gaggagtcag tgtaagtcct cactgtgatg agcagggcta gctgcgggag 1080 ctggtggacc ctctgggata gtctgacgta tgacccctgc tgcttcttgt ctacctgcag 1140 gctaaggatc agtgctacct gatgaagcag gtgctcaact tcaccctgga agacattctg 1200 ctcccccagt cagacaggtt ccggccctac atgcaggagg tggtgccttt cctgaccaaa 1260

ctcagcaatc agetcagete etgtgtaagt etggetetgg etacetatge teetetet 1320 tectetteta ttecagtaag aaccegaggt cetgeeetet etetetteae aagagtgagg 1380 agggcctcag caccaccacc atcataggcc acttgaaata ggtcacaaag gctttggctt 1440 caattgagta atactttgag tttgtattag ttaagcttta tttgttttat ccatggaaag 1500 aaatcaactc aaattctgta ggatgagaaa gatgttggga acgaaaaaag gcctagatag 1560 agaaacagat ctgctgagta cagtacttat ggggggggg ggcagggggc gatatccact 1620 gagtccaagt acttgttggg agagaaatcc actgagtaca agtacttgtg ggggaaggaa 1680 tggcacagag caaaagttga agggaaagag gaagatggag aggcctcaat gttgggggtg 1740 tgaaaggtca ctcctttttc catgtgatgg agagttaaga aaaatcagtg tgtgagtttg 1800 atgtcttcag acaccccaac tatggcagac tgtgggagac ctggcattta gggaaggcgc 1860 ggcttttcac acgagaaact ttatgctcat ctcttgtgct acactcccac ctttgatgag 1920 gttaagetea ggtttegttt etacegttet tgetaetggt ggaaaettea gtaggattee 1980 ccaaagacga ggacagctct tctgtaaggg agggacctgg atttcagtgt cctagagaac 2040 gaaatagete agagaateta ggteaacgtg aaatetaggt cacageggge aaaaatgaet 2100 gaacgcctct attccaggtg aacggtcacg tgcctcagat atactgaggt attgggctcc 2160 caccggataa gattctgtta gtgagtctgc ttttattttg cagcacatca gtggtgacga 2220 ccagaacatc cagaagaatg tcagaaggct gaaggagaca gtgaaaaagg tactattggc 2280 aagccacaat actaagccat tcagtaggag acgtggggat ttctttctct gcttcccagt 2340 ctcttctact ttgtaacatt ttctttgact tgtctactgt ctggtccatt actcacttag 2400 ctgcacctgc atctagctgg gtctatagat ctttcaatct gtgtctaaat ttgtaagtca 2460 caattotgga gotagoagaa agottagoto agocagtoto atgagoaott gotoggagga 2520 tggcttgtga cagagtcaat gctagaagac agcatccctg attcccagct ctgcacttgc 2580 ctagtggcca cgtgtaatta ctttagcctg attaagtatt tgggaaagcc aattcccacc 2640 gacctacata atccgaagaa gcatgcattg aaaactagaa agctgggcac aaacttacta 2700 gagatgattt ttgagctcat taaactgatg ctctgaaatg tgatcaaatc aacccagaat 2760 aacaacaaaa gagctggatt tgcaaatagg acaagtattt agaatcactg gtattaacag 2820 ctgtcatctt aattaaaata tagtgtctat ttagctgcct atttaagatt aaacacaaga 2880

gtggataact tcccaattta ctgggcctgg tttcaataga gtaaaaatat cagtcataga 2940 ttaattatag tgtcatgaaa gtatgagttg gaaacccttt ccttactttt taccttcatt 3000 tottagttat tattttttt tottcacaco otgatcaago cactagtaag cacctatotg 3060 ctgcgagcta ttatatgact ttacagcaaa caacattgct gtgtggcctc tttggggaag 3120 ggaacaggat agcaggaggc tcaggctagc aagtctggac tcaacctaaa gccagaggca 3180 tggttgatag cagagaaagt gaggctcttc acaagtgggt gtgcttaagt aatcagaaac 3240 aggaaggete tggttgatgg aattateagt aagatateta eeettatete ettettetat 3300 agaagctaaa ccgtctctcc ttcttgtgtg taggctgata aacacgcttg ttttcttttg 3360 agtgttcatg gctttgcaga ttttcagtgc tctgccagtt cttgttagag ggtttgttac 3420 cttgacacct gggcttggat gttagcatgc caaaggcaca cacttctgaa tgcctgtgta 3480 aaaggttatt attcatttac tttgtctttg gaaaggtgaa gtgtgtgtga gaaagaactc 3540 acaggagatg tattetetgt aggaaaaett tttttteeee ttaaaageet ataateeaet 3600 ttcagtcaac tttgactttt ataccatgct gtcacatgaa agagtgttta ggcccgctct 3660 cgtggctctg ggaaaagcac caatagggga agaaatgtta tgccgagaaa tctgactggc 3720 agggaaactg ggtcagagct ccccaaagac cactacaggt gttaagtagg aacagtcgag 3780 ggtgggttca tataatagaa tggaacagag ggagggaaga taagctacaa agtttcatag 3840 ggtcctaagt ctttaagata caaaatagct ggttgggctt cataacaaag gaagtctggg 3900 aaggcagcaa gcattgagag ggagatggaa agggaaaaaa caatgtagag gatttgaaaa 3960 gctacaaatc ctccacgaga ggatttttct tggaggaatc tagaacaagg gtggtggatt 4020 aggtggatcg cagaaggact tgctttgcca tttgaatctg ggtttttgtc tctccattga 4080 ggttgagagc gtcacccttt tttaccctgg ataggaggag gaaagaaggg gtgttttgac 4140 tectacetgg agtittacta gtitacgeaa tggaacagae actegggace tectettgae 4200 aagaaaaaaa aaaaaaaaag gaaacctgtt gtttctcttg tttgttcttt tgttaagaaa 4260 gcacaggcag ctgggcatgg tggcccatgc ctttaatccc agcatttggg aggcagaggc 4320 aggtgacttt ctaaattcaa ggccagcctg gtctacaaag tgagttccag gacagccagg 4380 



aagagaagag aagagaagag aagagaagag aagagaaaaag aaaagagaaa 4620 agaaaagaaa aaagcaagca agcaagcact ggcaaagcat gcccacatgg gacgtatgtg 4680 ggtctttgag acaaggcttt tgaattgagc gctcatcaat agttgatcat ggtcaggtgg 4740 agggetacet gteaggeega geeetgetgg ettageaett aacateteea ggteteagta 4800 tcacttcctg ctgcttagca cagttaggag ttgagcaaac ctttttttcc aacccccact 4860 aaaatttaat ttacaaaagg cagtgtaatt tgtgggatac agtgtgataa ttgatctatg 4920 tgtgcattgt gcaaggttca ataaggtaga tcaataggcc catcaacagc tttatgggtg 4980 tgaaatgcaa gtaatatagg tagatgcctg tgtgtcctta ggtcagaaag gcatgatttt 5040 aaggtottgg gcaaatcata ttatactcat gttaaaaatg cattatgttg attatcaatc 5100 ttttagagaa ggctgatact tggttttggt gctcagcaag caaatgtcac cagctctttc 5160 taactagtac cactttagaa aatgctaccc gtgctcaaat tggtttgtat tcttattttc 5220 atagettgga gagageggag agateaaage gateggggaa etggaeetge tgtttatgte 5280 tetgagaaat gettgegtet gagegagaag aagetagaaa aegaagaaet geteetteet 5340 gccttctaaa aagaacaata agatccctga atggactttt ttactaaagg aaagtgagaa 5400 gctaacgtcc accatcatta gaagatttca catgaaacct ggctcagttg aaagagaaaa 5460 tagtgtcaag ttgtccatga gaccagaggt agacttgata accacaaaga ttcattgaca 5520 atattttatt gtcattgata atgcaacaga aaaagtatgt actttaaaaa attgtttgaa 5580 aggaggttac ctctcattcc tctagaagaa aagcctatgt aacttcattt ccataaccaa 5640 tactttatat atgtaagttt atttattata agtatacatt ttatttatgt cagtttatta 5700 atatggattt atttatagaa aaattatctg atgttgatat ttgagtataa agcaaataat 5760 atttatgata ataactatag aaacaagata tcttaggctt taataaacac atgaatatca 5820 taaatettet gtettgtaat tttteteeet ttaatateaa caataceate ategteatea 5880 ttacccaatc attctcatga cttcatgctt gactcatatt atctggtaaa gtttg 5935